REMARKS/ARGUMENTS

In the Final Rejection dated July 3, 2007, the examiner rejected claims 1-4, 8, 10, 11, 13, 15 and 17 under 35 U.S.C. § 102(b) as allegedly anticipated by Hamamoto, et al. (JP 11-329494). However, independent claims 1 and 11 recite that vinyl sulfone is present in the electrolyte in an amount ranging from 0.05 to 0.5 wt%, and independent claim 15 recites that the sulfone based organic compound is present in an amount ranging from 0.1 to 5 wt%. Hamamoto fails to disclose either of these ranges.

Hamamoto discloses the presence of a vinyl sulfone derivative in an electrolytic solution in an amount ranging from 0.1 to 10 wt% or from 0.01 to 20 wt%. See paragraphs 0013 and 0014. Hamamoto discloses no additional ranges of amounts of the vinyl sulfone derivative and does not disclose ranges similar to the 0.05 to 0.5 wt% range of vinyl sulfone or the 0.1 to 5 wt% range of sulfone based organic compound recited in the present claims. To sustain an anticipation rejection over the claimed ranges, Hamamoto must disclose the ranges with "sufficient specificity" to constitute an anticipation under the statute. *See* MPEP §2131.03 (II). Here, Hamamoto does not disclose the claimed ranges with "sufficient specificity" to be anticipatory because Hamamoto discloses very broad ranges encompassing numerous values far exceeding those covered by the ranges recited in the present claims. *See Atofina v. Great Lakes Chem. Corp.*, 78 U.S.P.Q.2d 1417, 1423 (Fed. Cir. 2006)(holding that a reference disclosing a temperature range of 100 to 500°C did not describe the claimed 330-450C range with sufficient specificity to be anticipatory). As in *Atofina v. Great Lakes Chem. Corp*, Hamamoto fails to describe the 0.05 to 0.5 wt% range of vinyl sulfone recited in independent claims 1 and 11 or the 0.1 to 5 wt% range of sulfone based organic compound recited in independent claim 15 with sufficient specificity to be anticipatory.

In addition, independent claims 1, 11 and 15 are not obvious over Hamamoto because the use of vinyl sulfone or the sulfone based organic compound in amounts within the claimed ranges exhibits unexpected and desirable results. As noted in the present specification, at page 6,

lines 3-10, the effect of inhibiting the generation of gas inside a battery is not likely when the sulfone based organic compound is used in an amount of less than 0.1 wt%, and initial charge and discharge efficiencies and cycle life performance of the battery are decreased in accordance with the increase in the amount of compound used when the sulfone based organic compound is used in an amount exceeding 10 wt%. In addition, the specification at page 7, lines 15-23 notes that when the vinyl sulfone is used in an amount between 0.05 and 0.5 wt%, initial capacity, discharge capacity at low temperature, high rate cycle life characteristics, and swelling inhibition properties are improved. Further, as shown in Fig. 2 and disclosed at page 12, lines 8-16, rates of increase in the thicknesses of the batteries after charging are lower when the content of vinyl sulfone is in the range of 0.1 to 5 wt%, and the rate of increase in thickness is much greater when the vinyl sulfone content is greater than 5 wt% (see Fig. 2 showing a much greater thickness variation ratio for the battery including vinyl sulfone in an amount of 10 wt%). Additionally, as shown in Fig. 3 and disclosed at page 12, lines 17-26, greater improvements in initial capacity and low temperature characteristics are achieved when the content of vinyl sulfone is in the range of 0.1 to 5 wt% compared to when the vinyl sulfone content is outside that range. Also, as shown in Fig. 4 and disclosed at page 12, line 27 to page 13, line 2, greater improvements in high rate cycle life characteristics are achieved when the vinyl sulfone is used in range of 0.1 to 0.5 wt% compared to when the vinyl sulfone is used in amounts outside that range. Given these unexpected and desirable results, independent claims 1, 11 and 15 are not obvious over Hamamoto.

Each of claims 2-4, 8, 10, 13 and 17 depends from one of independent claims 1, 11 or 15, each of which independent claims is allowable over Hamamoto as discussed above. Accordingly, claims 2-4, 8, 10, 13 and 17 are also allowable over Hamamoto.

Claims 1-4, 8, 10, 11, 13, 15 and 17 remain pending in this application, with claims 5-7, 9, 12, 14, 16 and 18 being withdrawn from consideration. In view of the above remarks, applicant submits that all of pending claims 1-4, 8, 10, 11, 13, 15 and 17 are in condition for allowance. Applicant therefore respectfully requests a timely indication of allowance. However,

if there are any remaining issues that can be addressed by telephone, applicant invites the examiner to contact applicant's counsel at the number indicated below.

Respectfully submitted,

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